A04 Maths Coursework Handling Data Checklist

INTRODUCTION

1. Write an **overall aim** for the investigation. ☐
   Example: The aim of my coursework is to investigate the amount of time that students spend on their mobile phones.

2. Write **hypotheses**, explaining **what** you think you will find out and **why**. (It does not matter if your predictions turn out to be incorrect). Ideally:
   - Write hypotheses where you **compare** two sets of data:
     Hypothesis: I predict that girls spend longer than boys using their mobile phones because… ☐
   - Write hypotheses where you look for a **connection** between two sets of data.
     Hypothesis: I predict that students with more expensive mobile phones use them more because …

METHOD

3. You have been provided with relevant data for Mayfield High School.
   You must **explain** how you intend to collect your **sample of data**, ensuring that you avoid any **bias**. Then: ☐
   For each hypothesis, explain:
   - What type of calculations you are going to use and **why**.
   - What type of statistical diagrams you are going to use and **why**.

Level	Presentation	Calculations
1 - 2	• Bar chart • Pictogram • Tally chart	Simple calculations: For example: • Find the mean for a list of numbers
3 - 4	Begin to compare two sets of data using: • Bar charts • Pie charts • Grouped frequency tables	• Begin to compare two sets of data using the range and one of the mode, median or mean. • Calculate the mean from a frequency table
5 - 6	• Draw a scatter graph and the line of best fit • Use frequency polygons for grouped data to compare distributions and make inferences • Two-way tables • Stem and leaf diagrams • Box plots • Cumulative frequency graphs	• Estimate the mean and median from grouped data. • Use the median and interquartile range from a box plot or cumulative frequency graph to compare two distributions •Calculate moving averages for a time-series graph
7 - 8	• Construct and interpret histograms with unequal intervals	• Select and justify a sampling method such as ‘stratified sampling’ • Find the equation of the line of best fit and interpret the gradient and intercept values in the context of the investigation

INTERPRETATION OF RESULTS

4. For each calculation / diagram comment on the results and discuss possible reasons for any exceptions. ☐

   Remember to relate the summarised data back to the initial problem. In other words, do the results agree with your initial hypotheses? Do not worry if the results are different but try to explain why they are.

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For example:
Don't just say 'the mean for girls is bigger'.
It is better to say 'using the **mean values**, **on average** girls spend longer on their mobile phones each day'.

Don't just say ' the range is bigger for girls'
It is better to say 'using the **range**, the amount of time that girls spend on the phone is **more varied** than the times for boys'.

SUB – HYPOTHESES

5. You may wish to investigate a particular aspect of your main hypothesis in more detail. ☐
   Examples:
   Do older girls spend the greatest amount of time using their mobile phone?
   Do older students have the most expensive phones?

   If you investigate any sub-hypotheses, complete steps 3 to 5 again.

CONCLUSION

6. Write a conclusion, summarising your results. ☐

   Remember to interpret the results in the context of the problem.

EVALUATION

7. What were the possible limitations in your work? ☐

   Explain how you would improve the investigation if you were to do it again.